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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

09/605,610

06/28/2000

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TI-29425

5869

7590

04/22/2004

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EXAMINER

LY, ANH VU H

ART UNIT

PAPER NUMBER

2667

DATE MAILED: 04/22/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/605,610

**Applicant(s)**

SCHMIDL ET AL.

**Examiner**

Anh-Vu H Ly

**Art Unit**

2667

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,6-8,11,13-23,26-28,31 and 33-38 is/are rejected.
- 7) ☒ Claim(s) 4,5,9,10,12,24,25,29,30 and 32 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4</u> . | 6) <input type="checkbox"/> Other: ____.  |

DETAILED ACTION

*Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

1. Claims 1-3, 6-8, 11, 13-14, 21-23, 26-28, 31, and 33-34 rejected under 35 U.S.C. 102(a) as being anticipated by the admitted prior art disclosed in the specification on pages 1-5.

With respect to claims 1, 11, 21, and 31, the admitted prior art disclosed on page 2, lines 9-23, that in TDD/WCDMA communications system, data are transmitted as QPSK symbols in data packets of a predetermined duration. Within a data frame having 15 of the slots, bi-directional communications are permitted using the slots for communications between the base station and the user station (transmitter circuitry comprising circuitry for transmitting a plurality of frames to a receiver in a first cell). Each TDD data packet includes a predetermined training sequence in the time slot, referred to in the art as midamble (wherein each of plurality of frames comprising a bit group), where this training sequence represents a known data pattern (wherein the transmitter circuitry comprising circuitry for inserting a bit sequence into the bit group) used for channel estimation. Specifically, the midamble includes information that is unique to a given cell (wherein the bit group uniquely distinguishes the first cell from a second cell adjacent the first cell) and is selected from a pre-defined set of 128 different possible bit sequences (wherein the bit sequence is selected from a plurality of bit sequences such that successive transmissions by the transmitter circuitry comprising a cycle of successive ones of plurality of bit sequences);

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thus, the unique sequence is assigned to the given cell and that information is encoded within the midamble of data frames transmitted by stations within the corresponding cell.

With respect to claims 2 and 22, the admitted prior art disclosed on page 2, lines 9-23, that each TDD data packet includes a predetermined training sequence in the time slot, referred to in the art as midamble (plurality of frames comprising a midamble and wherein the midamble comprising the bit group), where this training sequence represents a known data pattern used for channel estimation.

With respect to claims 3, 6-8, 23, and 26-28, the admitted prior art disclosed on page 2, lines 9-23, that the midamble includes information that is unique to a given cell and is selected from a pre-defined set of 128 different possible bit sequences (wherein plurality of bit sequences consisting of two bit sequences).

With respect to claims 13-14 and 33-34, the admitted prior art disclosed on page 2, lines 5-14, a WCDMA communications system employing TDD (transmitter circuitry comprising CDMA transmitter circuitry).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 15-16 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Fazel et al (US Patent No. 6,275,506 B1).

With respect to claims 15-16 and 35 the admitted prior art discloses on page 2, lines 9-23, using midamble in data frames for cell recognition in a WCDMA communications system employing TDD. A communications system must comprising the transmitting end and receiving end. Therefore, circuitry for receiving a plurality of frames by the receiver is addressed by the admitted prior art. The admitted prior art does not disclose circuitry for identifying paths in plurality of frames from successive correlation measures between successive ones of plurality of bit sequences in the cycle and bit group in each of plurality of frames and from frames having a like chip position. Fazel discloses (col. 11, lines 25-35) a method of correlating the received midamble information with known symbols, to produce channel state information (path identification and chip position). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the feature of correlating the received midamble information with known symbols in the admitted prior art's system, as suggested by Fazel, for producing channel station information.

3. Claims 15-20, 35, and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Klank (US Patent No. 6,690,658 B1).

With respect to claims 15-16 and 35, the admitted prior art discloses on page 2, lines 9-23, using midamble in data frames for cell recognition in a WCDMA communications system employing TDD. A communications system must comprising the transmitting end and receiving

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end. Therefore, circuitry for receiving a plurality of frames by the receiver is addressed by the admitted prior art. The admitted prior art does not disclose circuitry for identifying paths in plurality of frames from successive correlation measures between successive ones of plurality of bit sequences in the cycle and bit group in each of plurality of frames and from frames having a like chip position. Klank discloses (col. 15, lines 10-28) that in order to check the cluster identity (cell identification), the corresponding section of the control slot signal has to be demodulated, decoded, and compared with own cluster identity. A correlation with a sequence in accordance with the identity number can be made. Depending on the results and midamble correlation result, this yields different statements: Identity check positive, midambles: signals of their own cluster (chip like position); Identity check negative but midambles: signals of another cluster; Result negative, no midambles but some power may be sporadic interference. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the feature of correlating midamble information in the admitted prior art's system, as suggested by Klank, for identifying the actual paths in a cluster.

With respect to claims 17-18 and 37-38, the admitted prior art discloses on page 2, lines 9-23, that in TDD/WCDMA communications system, data are transmitted as QPSK symbols in data packets of a predetermined duration (receiver circuitry comprising circuitry for receiving a plurality of frames from a transmitter in a first cell). Each TDD data packet includes a predetermined training sequence in the time slot, referred to in the art as midamble (wherein each of plurality of frames comprising a bit group), where this training sequence represents a known data pattern (a bit sequence) used for channel estimation. Specifically, the midamble includes

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information that is unique to a given cell (wherein the bit group uniquely distinguishes the first cell from a second cell adjacent the first cell). The admitted prior art does not disclose circuitry for identifying paths in plurality of frames from successive correlation measures between successive ones of plurality of bit sequences in the cycle and bit group in each of plurality of frames and from frames having a like chip position. Klank discloses (col. 15, lines 10-28) that in order to check the cluster identity (cell identification), the corresponding section of the control slot signal has to be demodulated, decoded, and compared with own cluster identity. A correlation with a sequence in accordance with the identity number can be made. Depending on the results and midamble correlation result, this yields different statements: Identity check positive, midambles: signals of their own cluster (chip like position); Identity check negative but midambles: signals of another cluster; Result negative, no midambles but some power may be sporadic interference. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the feature of correlating midamble information in the admitted prior art's system, as suggested by Klank, for identifying the actual paths in a cluster.

With respect to claim 19, the admitted prior art disclosed on page 2, lines 9-23, that each TDD data packet includes a predetermined training sequence in the time slot, referred to in the art as midamble (plurality of frames comprising a midamble and wherein the midamble comprising the bit group), where this training sequence represents a known data pattern used for channel estimation.

With respect to claim 20, the admitted prior art disclosed on page 2, lines 9-23, that the midamble includes information that is unique to a given cell and is selected from a pre-defined set of 128 different possible bit sequences (wherein plurality of bit sequences consisting of two bit sequences).

4. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art and Klank further in view of Alamouti et al (US Pub No. 2003/0219080 A1).

With respect to claim 36, the admitted prior art and Klank have addressed all the claimed limitations recited in parent claim 21. The admitted prior art does not disclose applying channel estimates corresponding to actual paths to a maximal ratio combiner circuit. Alamouti discloses in Figs. 1, 3, and 4, wherein the outputs of channel estimator are fed into the combiner. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a combiner in the admitted prior art's system, as suggested by Alamouti, to detect the a reliable signal from a plurality of received signals.

***Allowable Subject Matter***

5. Claims 4-5, 9-10, 12, 24-25, 29-30, and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.



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Bahrenburg et al (US Patent No. 6,606,314 B1) discloses method and radio station for data transmission.

Wu et al (US Patent No. 6,584,150 B1) discloses dual direction channel estimator.


Meyer et al (US Patent No. 6,044,111) discloses equalizer with a sequence estimation method with state reduction for a receiver in a digital transmission system.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh-Vu H Ly whose telephone number is 703-306-5675. The examiner can normally be reached on Monday-Friday 7:00am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 703-305-4378. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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